

The subject of this thesis is the study of materials VPbS<sub>3</sub> and CrBiS<sub>3</sub>, misfit layer compounds, with emphasis on VPbS<sub>3</sub>. As we have recently shown, this material shows evidence of sliding ferroelectricity, a new type of ferroelectricity typical of van der Waals bonded materials. The domain structure of VPbS<sub>3</sub> can be imaged by both atomic force microscopy and scanning electron microscopy. Our tests show that the domains can be polarized by electron beam lithography. For bulk crystals, domains can typically be polarized with charge densities with order of thousands of  $\mu\text{C}/\text{cm}^2$  and with accelerating voltages from 20 kV. Exfoliated crystals are orders of magnitude more sensitive to charge density values. We have also confirmed the sliding ferroelectricity in CrBiS<sub>3</sub> material. Its domain structure can also be polarized by electron beam lithography, but probably due to the higher resistivity, charge densities as low as the order of tens of  $\mu\text{C}/\text{cm}^2$  can be used. Other structurally similar misfit layered compounds can be expected to be ferroelectric as well, which brings a wide range of possibilities for combining ferroelectricity and other material properties.